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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
DESTA, ELIAS	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,035	QIAO ET AL.	
	Examiner	Art Unit	
	Elias Desta	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 11-17* is/are rejected.

7)☒ Claim(s) *9 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Specification

1. The specification is objected to because of the following minor informalities:

- Page 5, line 18: insert the word 'be' before "used";
- Page 14: delete the phrase "We claim:" Corrections are required.

Claim rejection – 35 U.S.C. 112

2. *Claim 5* is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The intelligent agents noted in as noted in Fig. 2 of the instant application show that the intelligent agents reside in a data communication bus rather than wireless data communication.

Claim rejection – 35 U.S.C. 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. *Claims 1-4, 6, 7 and 12-17* are rejected under 35 U.S.C. 102(b) as anticipated by *Borchers et al.* (U.S. Patent 6,108,616).

In reference to claims 1 and 13: *Borchers et al.* teaches a method of utilizing model based intelligent agents for diagnosing and isolating (or processing) malfunction or faults in a computer controlled machinery because the agents have to be interactive with the machinery in order to carry out the diagnostic function (see *Borchers et al.*, column 1, lines 14-18 and column 2, lines 11-20) Further, these agents are designed in a software module. The method includes:

- Disposing (having) a plurality of intelligent agents (or autonomous diagnostic agents) (see *Borchers et al.*, Fig. 5). The plurality of these agents are disposed in a plurality of hierarchical levels, such as the 'slave', 'Agent A' and the 'Master' as noted in *Borchers et al.*, Fig. 5. These agents are in communication with computer controllers of the machinery or technical process and with each other (see *Borchers et al.*, column 5, lines 43-53);
- The first hierarchical level (slave agent) collects and analyzes the given data in order to obtain a first level of a diagnostic information and the first level diagnostic information (data obtained by the slave agent) is communicated to the second hierarchical level (see *Borchers et al.*, column 8, lines 59-66);

- The second hierarchical level to perform a second level of diagnostic tasks on the first level of diagnostic information (i.e., information obtained from the first or slave agents) and communicate the resulting information to a third hierarchical level (Mater Level) (see *Borchers et al.*, column 8, line 65 to column 9, line 3); and
- The third intelligent agent or the Master at third hierarchical level performs a third level or final diagnostic tasks using the information obtained from the second level (Agent A) where the Mater level of diagnostic tasks includes analyzing the second level (information from agent 'A') of a diagnostic information relative to reference information to accomplish fault isolation with in the machinery or technical process (see *Borchers et al.*, column 9, lines 4-13).

With regard to claims 2, 7, 12, 14 and 17: as noted above in claims 1 and 13, *Borchers et al.* further teaches that the diagnostic capability of the intelligent agent in the fist hierarchical level includes the capability to collect and analyze data to accomplish a first level of fault isolation because in *Borchers et al.*, column 8, lines 59-65 indicates that the fault detection of this multi agent system is carried out from bottom to the top where the bottom section represents the instrument interface stage.

With regard to claims 3, 4 and 15, as noted above in claims 1 and 13, *Borchers et al.* further teaches that the Mater or the third intelligent agent level runs higher-order

diagnostic agent processes which runs assessment which also is carried out by requesting further information from the fist and second (Slave and 'A') agents (see *Borchers et al.*, column 9, lines 4-25), hence the level of fault isolation surpasses the 'A' level intelligent diagnostic agents. Likewise, since the second agent also obtains data from the first and runs in a hierarchical mode, it is inherent to say that the second or 'A' intelligent agent also surpasses the slave or the fist agent.

Claim rejection - 35 U.S.C. 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. *Claims 8 and 11* are rejected under 35 U.S.C. 103(a) as being unpatentable over *Borchers et al.* (U.S. Patent 6,108,616) in view of *IPM* (*IPM* Article, 'Wireless Vehicle Interface).

In reference to claims 8 and 11: as noted above in claim 1, *Borchers et al.* further teaches that the Master or the third hierarchical level obtains reference information (see *Borchers et al.*, Fig. 1, 'Information Management Station' and Fig. 3, 'Area Fault Reports'), but *Borchers et al.* does not teach that the link between the remote central

knowledge or information management station and the 'Mater' or third hierarchical level is through a wireless communication link.

IPM teaches a wireless interface that has a short distance range that can communicate up to 16 remote interfaces (see *IPM*, page 1).

Therefore, it would have been obvious to one having ordinary skill in the art at time the invention was made to modify the process diagnostic system and method for diagnosis of process and states in a technical process or machinery as taught by *Borchers et al.* and incorporate a wireless interface concept as noted in *IPM* in order to have a wireless communication link between the third hierarchical or 'Mater' level and the information management station or area fault reports as noted in *Borchers et al.*, Fig. 3, because the wireless interface tool would eliminate the need for cables between the machinery or the vehicle under test and the PC running the diagnostic software.

Allowable Subject Matter

7. *Claims 9 and 10* are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Citation of pertinent prior art:

- *Weiss et al.* (IEEE Article, 'Design and Implementation of a Real-Time Multi-Agent System') teaches multi-agent, model-based real time fault diagnosis in a modular production system.
- *Murphey et al.* (IEEE Article, 'Automotive Fault Diagnosis – Part II: Distributed Agent Diagnostic System') teaches a distributed intelligent-agent system designed for vehicle diagnostics.
- *Hekmatpour* (U.S. Patent 5,870,768) teaches expert system and method employing hierarchical knowledge base, and interactive multimedia/Hypermedia applications.
- *Choe et al.* (U.S. Patent 6,694,285) teaches method and apparatus for monitoring rotating machinery.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elias Desta whose telephone number is (571)-272-2214. The examiner can normally be reached on M-Thu (8:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)-272-2216. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-872-9306 for regular communications and After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)-272-1750.

Elias Desta
Examiner
Art Unit 2857

-ed

November 16, 2004

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800